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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,608	11/29/2001	Akira Tsuboyama	684.3292	2296
5514	7590	03/02/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			YAMNITZKY, MARIE ROSE	
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NEW YORK, NY 10112			PAPER NUMBER	
			1774	
DATE MAILED: 03/02/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/995,608	<b>Applicant(s)</b> TSUBOYAMA ET AL.	
	<b>Examiner</b> Marie R. Yamnitzky	<b>Art Unit</b> 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003 and 01 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2-4, 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5-10, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>rec'd 10 Oct 2003</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. This Office action is in response to applicants' amendment received December 01, 2003, which amends the abstract, the specification, and claims 1, 4 and 8-10.

Claims 1-14 are pending.

2. The claims remain subject to an election of species.

Claims 1, 5-10, 13 and 14 continue to read on the elected species although the ultimate species that was used as the starting point for search and examination purposes is not within the scope of the pending claims.

Claims 2-4, 11 and 12 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. The prior provisional election was affirmed **without** traverse in applicants' amendment received December 01, 2003. (While some prior art is applied in the present action to non-elected species, this action should not be taken as an examination on the merits of all species encompassed by the claims.)

3. The objection to the disclosure is overcome by applicants' amendment.

The rejection of claims 1, 5-10, 13 and 14 under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, as set forth in the Office action mailed May 27, 2003 is overcome by applicants' amendment. New issues raised by applicants' amendment are set forth in this Office action.

The rejection of claims 1 and 5-7 under 35 U.S.C. 102(b) as being anticipated by Maestri et al. in *Advances in Photochemistry*, Vol. 17, pp. 1-68, is overcome by applicants' amendment.

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The Maestri reference is not applicable to the present independent claims under 35 U.S.C. 102 or 103.

The rejection of claims 1, 5-10, 13 and 14 under 35 U.S.C. 102(e) as anticipated by Grushin et al. (US 2002/0121638 A1) is overcome by applicants' amendment. This published application of Grushin et al. is not applicable to the present independent claims under 35 U.S.C. 102 or 103.

4. The rejection of claims 1, 5-10, 13 and 14 under 35 U.S.C. 102(e) as anticipated by Igarashi et al. (US 2001/0019782 A1) is not overcome by applicants' amendment. The rejection is restated in this Office action to reflect the amendments made to claims 1 and 10.

The previously applied published application of Thompson et al. (US 2002/0034656 A1) is also applicable to the amended claims for the reasons set forth in this Office action.

5. Claims 1, 5-10, 13 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 1 and 10 initially provide two definitions for CyN1-CyN4. Neither definition is supported for CyN4 which, as taught in the application as originally filed, denotes a cyclic group

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containing 8-quinoline or its derivative having a nitrogen atom connected to M (e.g. see page 10 of the specification and original claims 1 and 10).

The second definition for CyN1-CyN4 (set forth beginning in the fourth line after formulae (2)-(5) in claims 1 and 10) is not supported by the application as originally filed because the Markush group encompasses cyclic groups that do not contain a nitrogen atom connected to M, which is a requirement for CyN1-CyN3.

The formula for Tn1 as set forth in claims 1 and 10 differs from the formula for Tn1 as set forth in the original disclosure. The two variables are each shown as R<sub>1</sub> whereas the original disclosure showed the variables as R<sub>1</sub> and R<sub>2</sub>.

The formula for Tn3 as set forth in claims 1 and 10 differs from the formula for Tn3 as set forth in the original disclosure. The formula for Tn3 in present claims 1 and 10 does not show the positions at which this portion of the ligand will bond to M and to the remainder of the ligand.

The formula for Np as set forth in claims 1 and 10 differs from the formula for Np as set forth in the original disclosure. The formula for Np in present claims 1 and 10 includes a nitrogen not shown in the originally disclosed formula for Np.

Condition I) as set forth in claims 1 and 10 is confusing and it is not clear that the original disclosure provides complete support for condition I).

The original disclosure provides insufficient support for R<sub>1</sub>=CF<sub>3</sub> as set forth for condition O) in claims 1 and 10.

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6. Claims 1, 5-10, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 10 set forth two different definitions for CyN1-CyN4.

The second definition of CyN1-CyN4 is confusing because the Markush group encompasses possibilities that do not provide a cyclic group containing a nitrogen atom connected to M. Based on the original disclosure, the second definition of CyN1-CyN4 should instead define CyC1-CyC3.

The first and second definitions are confusing because both set forth "Pz" as a member of the Markush group and there are two different formula labeled "Pz" (the thirteenth and nineteenth formula following the second definition). The examiner suggests that, at least in the claims, the two "Pz" formulae be distinguished from each other such as by labeling one as "Pz1" and the other as "Pz2".

Conditions B), J), K), L) and P) as set forth in claims 1 and 10 are confusing because L' as defined for these conditions does not meet the limitations of L' as defined with respect to formula (1). As defined with respect to formula (1), L' is required to provide the partial structure ML'n represented by formula (4) or formula (5).

In Condition D) as set forth in claims 1 and 10, "Tn3" is recited twice in the definition of CyC3.

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In Condition G) as set forth in claims 1 and 10, CyC3 is first defined as representing Pr and then defined as representing Tn1...Ph. No definition is provided for CyN3 in condition G). It appears that the first definition of CyC3 should instead define CyN3.

Condition I) as set forth in claims 1 and 10 is not clear. The limitations imposed by the phrase "when CyN3=Py2 and R<sub>1</sub>-R<sub>4</sub>=H, CyC3=Qx, Qz1, or Qz2" are not clear. It is uncertain if this language means that CyC3 is not limited to Qx, Qz1 or Qz2 if R<sub>1</sub>-R<sub>4</sub> do not all represent H and/or if CyN3 does not represent Py2. The limitations imposed by the phrase "when CyC3=Ph or Tn3, two of R<sub>1</sub>, R<sub>2</sub> and R<sub>4</sub> are H and the remaining one thereof is CH<sub>3</sub>; and R<sub>3</sub>=H" are not clear because condition I) does not previously allow CyC3 to represent Ph or Tn3. It is not clear what CyN3 represents when CyC3 represents Ph or Tn3 according to condition I).

Conditions O) and P) appear to be contradictory because the use of the term "when" in condition O) appears to limit CyN2, CyN3, CyC2 and CyC3 to the possibilities recited in condition O) anytime M=Pt, m=1, n=1. Condition P) requires M=Pt, m=1 and n=1 but does not require CyN2, CyN3, CyC2 and CyC3 to be limited to possibilities recited in condition O).

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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8. Claims 1, 5-10, 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi et al. (US 2001/0019782 A1).

Igarashi et al. disclose iridium metal coordination compounds for use as light emitting compounds in organic electroluminescent devices.

The compound represented by formula (1-15) in Igarashi's published application is a compound represented by present formula (1) that meets conditions C) and E) as set forth in present claims 1 and 10. Igarashi's compound of formula (1-15) meets present condition C) in which ML<sub>m</sub> is represented by formula (3), ML'<sub>n</sub> is represented by formula (4), m is 2, n is 1, M is Ir, CyN<sub>2</sub> is Pr, CyC<sub>2</sub> is Ph, R<sub>1</sub>-R<sub>4</sub> of L are H, CyN<sub>3</sub> is Pr, CyC<sub>3</sub> is Tn1 and R<sub>1</sub>-R<sub>4</sub> of L' are H. Igarashi's compound of formula (1-15) meets present condition E) in which ML<sub>m</sub> is represented by formula (3), ML'<sub>n</sub> is represented by formula (4), M is Ir, m is 1, n is 2, CyN<sub>2</sub> is Pr, CyC<sub>2</sub> is Tn1, R<sub>1</sub>-R<sub>4</sub> of L are H, CyN<sub>3</sub> is Pr, CyC<sub>3</sub> is Ph and R<sub>1</sub>-R<sub>4</sub> of L' are H.

The limitations of claims 5-9 are expected to be inherently met by Igarashi's compound of formula (1-15), which has the same ligands as the compound of formula 41 shown on page 24 of the specification.

The present application claims priority of three Japanese applications, one of which was filed prior to the U.S. filing date of Igarashi's application. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.



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9. Claims 1, 5-10, 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (US 2002/0034656 A1).

This rejection is made subject to clarification of the apparently contradictory limitations set forth in claims 1 and 10.

Thompson et al. disclose iridium metal coordination compounds for use as light emitting compounds in organic electroluminescent devices.

The device as claimed in claim 73 of Thompson's published application requires a compound of the formula  $L_2MX$  wherein M is iridium, L and X are inequivalent bidentate ligands, L is selected from a Markush group consisting of ten ligands (noting that thienylpyridine is recited twice) and M is selected from a Markush group consisting of five ligands. The Markush groups thus provide for 50 iridium compounds. Of those 50 compounds, three meet condition J) as set forth in present claims 1 and 10. The three that meet condition J) are those in which L is phenylpyridine, thienylpyridine or benzothienylpyridine, and X is 8-hydroxyquinolate. These three correspond to compounds meeting condition J) in which  $ML_m$  is represented by formula (3), M is Ir, m is 2, n is 1, CyN2 is Pr, CyC2 is Ph, Tn1 or Tn3,  $R_1-R_4$  of L are H, and  $ML'_n$  is represented by formula (11). It is the examiner's position that one of ordinary skill in the art at the time of the invention could at once envisage each of the compounds within the scope of compounds of formula  $L_2MX$  as defined by Thompson's claim 73 and thus could at once envisage compounds within the scope of the present claims.

The limitations of claims 5-9 are expected to be inherently met by Thompson's compounds that meet the limitations of present condition J). For example, Thompson's iridium

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complex of formula  $L_2MX$  in which L is phenylpyridine and X is 8-hydroxyquinolate is the compound of formula 42 shown on page 24 of the specification and is therefore expected to have the same properties as the compound of formula 42.

Thompson's published application claims priority of several prior U.S. patent applications. The subject matter of claim 73 of the published application is part of the original disclosure in prior application 09/452,346, filed December 01, 1999.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 5-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1) as applied above to claims 1, 5-10, 13 and 14 under 35 U.S.C. 102(e), and for the further reasons set forth below.

Igarashi's compound of formula (1-15) is a compound having two phenylpyridine ligands and one thienylpyridine ligand. As noted above, Conditions C) and E) as set forth in present claims 1 and 10 encompass this compound.

Conditions C), D) and E) as set forth in claims 1 and 10 also encompass an iridium compound having one phenylpyridine ligand and two thienylpyridine ligands. Such a compound would have been *prima facie* obvious to one of ordinary skill in the art at the time of the

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invention having knowledge of Igarashi's disclosure. One of ordinary skill in the art would have been motivated to make iridium compounds similar to the specific iridium compounds disclosed by Igarashi et al. with the expectation that compounds similar in structure would be suitable for Igarashi's purposes. One of ordinary skill in the art at the time of the invention, considering Igarashi's teachings as a whole, would have reasonably expected that an iridium compound having the same ligands as Igarashi's compound of formula (1-15) but in a different ratio would provide a light emitting compound suitable for use in an organic electroluminescent device.

12. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.  
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
February 19, 2004



MARIE YAMNITZKY  
PRIMARY EXAMINER

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